

[0034] A luminous blue border around a stereoscopic image creates a zone of depth ambiguity about the location of the screen on which the stereoscopic image is displayed image. This ambiguity can be employed to suppress and possibly inhibit stereoscopic pinning and is employed for this purpose in this patent.

[0035] Figure 1 teaches that there is little overlap in spectral response between S- and either L- or M- cones at wavelength at 450 nm or less. As such, the luminous border described should emit light at approximately this or shorter wavelengths.

Claims

[c1]

An apparatus for preventing loss of depth perception by a viewer due to depth stereoscopic pinning, said apparatus comprising:

a) a stereoscopic image display for stereoscopically generating an object perceived by said viewer at a perceived depth;

b) a periphery around said stereoscopic image display;

c) an stereoscopic anti-pinning element positioned in said periphery for projecting radiation comprising a blue wavelength to said viewer and thus creating an image border with ambiguous depth location, thereby preventing said viewer from depth stereoscopic pinning at said stereoscopic image display.

[c2]

The apparatus of claim 1, wherein said stereoscopic anti-pinning element is an active emitter of said radiation.

[c3]

The apparatus of claim 2, wherein said active emitter is a light source mounted in said periphery

[c4]

The apparatus of claim 1, wherein said stereoscopic anti-pinning element is coextensive with said periphery.

[c5]

The apparatus of claim 1, wherein said object is perceived by said viewer at a perceived depth within a field of view and said stereoscopic anti-pinning element is

positioned at a location in said periphery where said object appears to said viewer to approach a border of said field of view.

[c6]

The apparatus of claim 1, wherein said stereoscopic image display comprises at least one screen and stereoscopically generates said object from elements projected on said at least one screen.

[c7]

The apparatus of claim 1, wherein said stereoscopic image display augmented with an stereoscopic anti-pinning element positioned in said periphery for projecting radiation comprising a blue wavelength to said viewer is activated only when objects approach the border-edge of the viewer's stereoscopic field of view.

[c8]

The apparatus of claim 1, wherein said stereoscopic image display augmented with an stereoscopic anti-pinning element positioned in said periphery for projecting radiation comprising a blue wavelength to said viewer vary its intensity as objects approach the border-edge of the viewer's field of view.

[c9]

The apparatus of claim 6, wherein said image display comprises a multiplicity of display screens having multiple interfaces, and additional stereoscopic anti-pinning elements positioned at said interfaces for projecting radiation comprising said blue wavelength to said viewer.

[c10]

The apparatus of claim 1, wherein said blue wavelength comprises wavelengths inducing depth ambiguity in said viewer, thereby preventing said viewer from depth stereoscopic pinning.

[c11]

A method for preventing loss of depth perception by a viewer due to depth stereoscopic pinning, said method comprising:

a) stereoscopically generating an object on a stereoscopic image display, such that said object is perceived by said viewer at a perceived depth;

b) providing a periphery around said stereoscopic image display;

c) positioning an stereoscopic anti-pinning element in said periphery for projecting radiation comprising a blue wavelength to said viewer, thereby

preventing said viewer from depth-stereoscopic pinning at said stereoscopic image display.

[c12]

The method of claim 11, wherein said step of stereoscopically generating said object employs a stereoscopic technique selected from the group consisting of:

- a) Time multiplexed presentation of left and right image in conjunction with apparatus synchronized with said presentation so that the left eye views the left image when said left image is displayed and right eye views the right image when said right image is displayed;
- b) Spatially multiplex presentation of left and right image combined with a viewing apparatus that enables the right eye to see the right image and the left eye to see the left image;
- c) Simultaneous presentation of both left and right images such that the left eye sees the left image and the right eye sees the right image by virtue of the cross-polarization of the light and simultaneous use of polarized viewing device such that each eye sees one of the two cross polarized images;
- d) simultaneous presentation of both left and right images such that the left eye sees the left image and the right eye sees only the right image by virtue of color encoding differences between each image and simultaneous use of color matched viewing device such that each eye sees one of the two color encoded images (e.g.-anaglyph);
- e) Time multiplexed presentation of left and right image in conjunction with a polarizing device interposed between the display image and the viewer, capable of switching the polarization of the light passing through and thus providing time multiplexed presentation of left image with one polarization and the right image with a crossed polarization combined with a viewing apparatus that enables the right eye to see the right image and the left eye to see the left image;
- f) Stereoscopic images created by use of intensity attenuating viewing apparatus such that one eye sees a darkened image and the other eye sees a brightened image thus causing the visual system to take longer to process the darkened image than the brightened image and thus matching two precepts at slightly different points in time (e.g. Purflich effect);

g.) Stereoscopic images created by using a multiplicity of stacked display surfaces that vary slightly in distance to the viewer causing said viewer to perceive depth by virtue of the visual system seeing elements on said multiplicity of stacked display surfaces as positioned at different distances;

h) Stereoscopic display devices designed such that each eye is presented with a different image such that the left eye sees a left image and the right eye sees a right image, said display device created by use of optical components that direct each image to the eye that is intended to see that image (e.g. ~~virtual reality goggles~~);

i) Any display device capable of inducing a stereoscopic illusion.

[c13]

The method of claim 11 wherein said viewer perceives said object within a field of view having a border, and said stereoscopic anti-pinning element is positioned such that it appears to said viewer near said border.

[c14]

| The method of claim 11 wherein said stereoscopic anti-pinning element emits radiation comprising said blue wavelength.

[c15]

| The method of claim 11, wherein said stereoscopic anti-pinning element emits radiation comprising said blue wavelength are only employed when objects approach the border of the viewer's field of view.

[c16]

| The method of claim 11, wherein said stereoscopic anti-pinning element emits radiation comprising blue wavelength of light vary in intensity as objects approach the border of the viewer's field of view stereoscopic image.

[c17]

| A method for preventing loss of depth perception by a viewer due to ~~depth~~ stereoscopic pinning, said method comprising:

a) stereoscopic generating an object being perceived by said viewer at a perceived depth within a field of view having a border;

b) positioning a stereoscopic anti-pinning element such that said viewer perceives said stereoscopic anti-pinning element near a border of said field of view, thereby preventing said viewer from depth-stereoscopic pinning.

[c18]

The method of claim 17 wherein said step of stereoscopically generating said object employs a stereoscopic technique selected from the group consisting of:

- a) Time multiplexed presentation of left and right image in conjunction with apparatus synchronized with said presentation so that the left eye views the left image when said left image is displayed and right eye views the right image when said right image is displayed;
- b) Spatially multiplex presentation of left and right image combined with a viewing apparatus that enables the right eye to see the right image and the left eye to see the left image
- c) Simultaneous presentation of both left and right images such that the left eye sees the left image and the right eye sees the right image by virtue of the cross-polarization of the light and simultaneous use of polarized viewing device such that each eye sees one of the two cross polarized images;
- d) simultaneous presentation of both left and right images such that the left eye sees the left image and the right eye sees only the right image by virtue of color encoding differences between each image and simultaneous use of color matched viewing device such that each eye sees one of the two color encoded images (e.g. anaglyph);
- e) Time multiplexed presentation of left and right image in conjunction with a polarizing device interposed between the display image and the viewer, capable of switching the polarization of the light passing through and thus providing time multiplexed presentation of left image with one polarization and the right image with a crossed polarization combined with a viewing apparatus that enables the right eye to see the right image and the left eye to see the left image;
- f) Stereoscopic images created by use of intensity attenuating viewing apparatus such that one eye sees a darkened image and the other eye sees a brightened image thus causing the visual system to take longer to process the darkened